

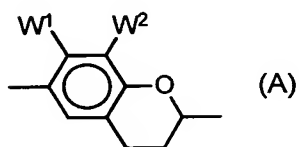
CLAIMS

1. A liquid crystal display element:

having a structure comprising a pair of substrates, and a liquid crystal composition sandwiched between the substrates;

comprising at least an alignment control layer, a transparent electrode, and a polarizing plate; and

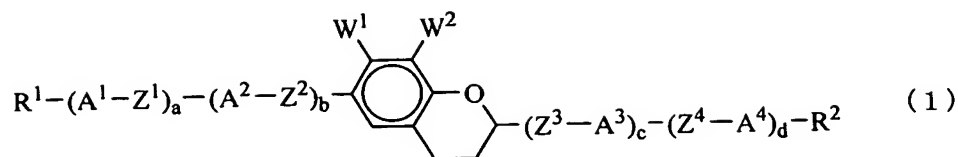
characterized in that the liquid crystal composition comprises at least one liquid crystal compound having a partial structure represented by general formula (A):



(wherein W^1 and W^2 each independently represents fluorine, chlorine, $-CF_3$, $-CF_2H$, $-OCF_3$, or $-OCF_2H$) and has a negative dielectric anisotropy.

2. (Amended) A liquid crystal display element according to claim 1, wherein W^1 and W^2 represent fluorine in the general formula (A).

3. A compound represented by general formula (1):



(wherein

R^1 and R^2 each independently represents hydrogen, an alkyl group having 1 to 12 carbon atoms or an alkenyl group having 2 to 12 carbon atoms, in which one CH_2 group or at least two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur, or in which at least one hydrogen may be substituted by fluorine or chlorine,

A^1 , A^2 , A^3 , and A^4 each independently represents a trans-1,4-cyclohexylene group (in which one CH_2 group or two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur), a 1,4-phenylene group (in which at least one CH group may be substituted by nitrogen), a 1,4-cyclohexenylene group, a 1,4-bicyclo[2.2.2]octylene group, a piperidine-1,4-diyl group, a naphthalene-2,6-diyl group, a decahydronaphthalene-2,6-diyl group or a 1,2,3,4-tetrahydronaphthalene-2,6-diyl group, in which hydrogen may be substituted by -CN or halogen,

Z^1 , Z^2 , Z^3 , and Z^4 each independently represents $-\text{CH}_2\text{CH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{CH}(\text{CH}_3)\text{CH}_2-$, $-\text{CH}_2\text{CH}(\text{CH}_3)-$, $-\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)-$, $-\text{CF}_2\text{CF}_2-$, $-\text{CF}=\text{CF}-$, $-\text{CH}_2\text{O}-$,

-OCH₂-, -OCH(CH₃)-, -CH(CH₃)O-, -(CH₂)₄-, -(CH₂)₃O-, -O(CH₂)₃-, -C≡C-, -CF₂O-,
 -OCF₂-, -COO-, -OCO-, -COS-, -SCO-, or a single bond,

when A¹, A², A³, A⁴, Z¹, Z², Z³, and Z⁴ respectively exist in plural, they may
 be identical to each other or different from each other,

a, b, c, and d each independently represents 0 or 1, and

W¹ and W² each independently represents fluorine, chlorine, -CF₃, -CF₂H,
 -OCF₃, or -OCF₂H).

4. (Amended) A compound according to claim 3, wherein R¹ and R² each
 independently represents an alkyl group having 1 to 7 carbon atoms or an alkenyl group
 having 2 to 7 carbon atoms (in which one CH₂ group may be substituted by oxygen), and
 W¹ and W² represent fluorine in the general formula (1).

5. (Amended) A compound according to claim 3, wherein A¹, A², A³ and A⁴
 each independently represents a trans1,4-cyclohexylene group, a 1,4-phenylene group
 which may be substituted by at least one fluorine, or a 1,4-bicyclo[2.2.2]octylene group
 in the general formula (1).

6. (Amended) A compound according to claim 3, wherein Z^1 , Z^2 , Z^3 , and Z^4 each independently represents $-\text{CH}_2\text{CH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{CF}_2\text{CF}_2-$, $-\text{CF}=\text{CF}-$, $-\text{CH}_2\text{O}-$, $-\text{OCH}_2-$, $-\text{C}\equiv\text{C}-$, $-\text{CF}_2\text{O}-$, $-\text{OCF}_2-$ or a single bond in the general formula (1).
7. (Amended) A compound according to claim 3, wherein the sum of a, b, c, and d is 1 or 2 in the general formula (1).
8. (Amended) A compound according to claim 3, wherein R^1 and R^2 each independently represents an alkyl group having 1 to 7 carbon atoms or an alkenyl group having 2 to 7 carbon atoms (in which a CH_2 group may be substituted by oxygen), W^1 and W^2 represent fluorine, A^1 , A^2 , A^3 , and A^4 each independently represents a trans-1,4-cyclohexylene group, a 1,4-phenylene group which may be substituted by at least one fluorine, or a 1,4-bicyclo[2.2.2]octylene group, Z^1 , Z^2 , Z^3 and Z^4 each independently represents $-\text{CH}_2\text{CH}_2-$, $-\text{CH}=\text{CH}-$, $-\text{CF}_2\text{CF}_2-$, $-\text{CF}=\text{CF}-$, $-\text{CH}_2\text{O}-$, $-\text{OCH}_2-$, $-\text{C}\equiv\text{C}-$, $-\text{CF}_2\text{O}-$, $-\text{OCF}_2-$, or a single bond, and the sum of a, b, c, and d is 1 or 2 in the general formula (1).
9. (Amended) A compound according to claim 3, wherein R^1 and R^2 each

independently represents an alkyl group having 1 to 7 carbon atoms, an alkenyl group having 2 to 7 carbon atoms, or an alkoxyl group having 1 to 7 carbon atoms, A^1 , A^2 , A^3 , and A^4 each independently represents a trans-1,4-cyclohexylene group, a 1,4-phenylene group, a 2-fluoro-1,4-phenylene group, a 3-fluoro-1,4-phenylene group, or a 2,3-difluoro-1,4-phenylene group, Z^1 , Z^2 , Z^3 , and Z^4 each independently represents -CH₂CH₂-, -CH₂O-, -OCH₂-, or a single bond, W^1 and W^2 represent fluorine, and the sum of a, b, c, and d is 1 or 2 in the general formula (1).

10. (Amended) A compound according to claim 9, wherein A^1 , A^2 , A^3 , and A^4 each independently represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group in the general formula (1).

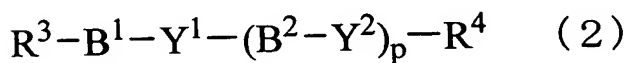
11. (Canceled)

12. (Canceled)

13. (Amended) A liquid crystal composition comprising at least one liquid crystal compound according to any one of claims 3 to 10.

14. (Canceled)

15. (Amended) A liquid crystal composition according to claim 13, comprising at least one compound represented by general formula (2):



(wherein,

R^3 and R^4 each independently represents hydrogen, an alkyl group having 1 to 12 carbon atoms or an alkenyl group having 2 to 12 carbon atoms, in which one CH_2 group or at least two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur, or in which at least one hydrogen may be substituted by fluorine or chlorine,

B^1 and B^2 each independently represents a trans-1,4-cyclohexylene group (in which one CH_2 group or two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur), a 1,4-phenylene group (in which at least one CH group may be substituted by nitrogen), a 1,4-cyclohexenylene group, a 1,4-bicyclo[2.2.2]octylene group, a piperidine-1,4-diyl group, a naphthalene-2,6-diyl group, a decahydronaphthalene-2,6-diyl group or a

1,2,3,4-tetrahydronaphthalene-2,6-diyl group, in which hydrogen may be substituted by

-CN or halogen,

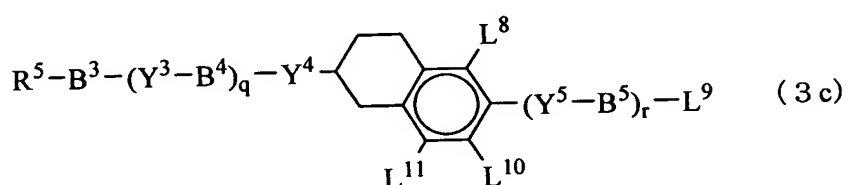
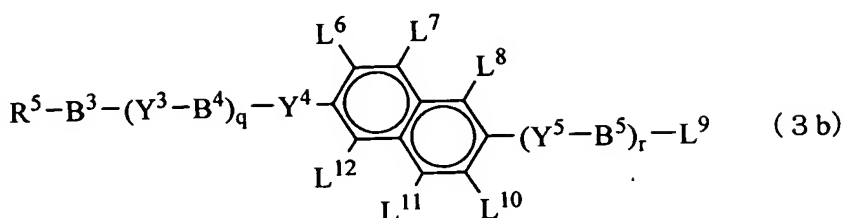
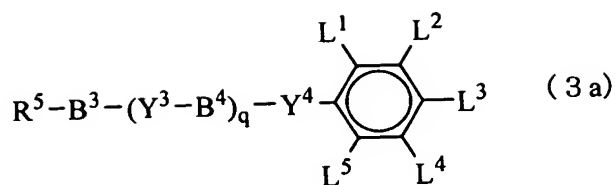
Y¹ and Y² each independently represents -CH₂CH₂-, -CH=CH-, -CH(CH₃)CH₂-,
 -CH₂CH(CH₃)-, -CH(CH₃)CH(CH₃)-, -CF₂CF₂-, -CF=CF-, -CH₂O-, -OCH₂-,
 -OCH(CH₃)-, -CH(CH₃)O-, -(CH₂)₄-, -(CH₂)₃O-, -O(CH₂)₃-, -C≡C-, -CF₂O-, -OCF₂-,
 -COO-, -OCO-, -COS-, -SCO-, or a single bond,

when Y² and B² respectively exist in plural, they may be identical to each other
 or different from each other, and

p represents 0, 1 or 2).

16. (Amended) A liquid crystal display element according to claim 1,
 comprising at least one compound represented by the general formula (2) according to
 claim 15.

17. (Amended) A liquid crystal composition according to claim 13, comprising
 at least one compound selected from the group consisting of compounds represented by
 general formula (3a), general formula (3b), and general formula (3c):



(wherein

R^5 represents hydrogen, an alkyl group having 1 to 12 carbon atoms or an alkenyl group having 2 to 12 carbon atoms, in which one CH_2 group or at least two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur, or in which at least one hydrogen may be substituted by fluorine or chlorine,

B^3 , B^4 , and B^5 each independently represents a trans-1,4-cyclohexylene group (in which one CH_2 group or two CH_2 groups that are not adjacent to each other may be substituted by oxygen or sulfur), a 1,4-phenylene group (in which at least one CH group may be substituted by nitrogen), a 1,4-cyclohexenylene group, a 1,4-bicyclo[2.2.2]octylene group, a piperidine-1,4-diyl group, a naphthalene-2,6-diyl group, a decahydronaphthalene-2,6-diyl group or a

1,2,3,4-tetrahydronaphthalene-2,6-diyl group, in which hydrogen may be substituted by

-CN or halogen,

Y^3 , Y^4 , and Y^5 each independently represents $-CH_2CH_2-$, $-CH=CH-$,
 $-CH(CH_3)CH_2-$, $-CH_2CH(CH_3)-$, $-CH(CH_3)CH(CH_3)-$, $-CF_2CF_2-$, $-CF=CF-$, $-CH_2O-$,
 $-OCH_2-$, $-OCH(CH_3)-$, $-CH(CH_3)O-$, $-(CH_2)_4-$, $-(CH_2)_3O-$, $-O(CH_2)_3-$, $-C\equiv C-$, $-CF_2O-$,
 $-OCF_2-$, $-COO-$, $-OCO-$, $-COS-$, $-SCO-$, or a single bond,

L^1 , L^2 , L^4 , L^5 , L^6 , L^7 , L^8 , L^{10} , L^{11} , and L^{12} each independently represents

hydrogen or fluorine,

q and r each independently represents 0, 1, or 2, provided that the sum of q and r
 is no more than 2, and

L^3 and L^9 each independently represents hydrogen, fluorine, chlorine, $-CN$, $-CF_3$,
 $-OCH_2F$, $-OCHF_2$, $-OCF_3$, $-CH_2CF_3$, or the same meaning as R^5).

18. (Amended) A liquid crystal composition according to claim 13, wherein a
 content ratio of the liquid crystal compound according to any one of claims 3 to 10 is 2 to
 30% by mass.

19. (Amended) A liquid crystal composition according to claim 13, wherein

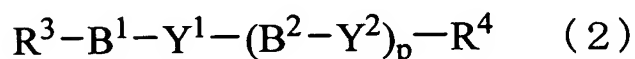
the liquid crystal composition has a dielectric anisotropy value of no more than -0.2.

20. (Amended) A liquid crystal display element according to claim 1, wherein the liquid crystal display element has an active matrix drive system.

21. (Amended) A liquid crystal display element according to claim 1, wherein the liquid crystal display element has a liquid crystal alignment regulated by the alignment control layer to be vertical to a surface of the substrate .

Brief Statement under Article 19

In original claim 14, a compound represented by general formula (2)



is described.

On the other hand, Document 1 (JP2002-69449A), Document 2 (JP2001-40355A), and Document 3 (JP2002-532613A), which were cited in the International Search Report, disclose compounds similar to the compound represented by general formula (2).

Accordingly, original claim 14 is canceled by amendment under PCT Article 19(1). In accordance with this amendment, claim 15 is amended to newly define the compound represented by general formula (2), and claim 16 is amended to depend on claim 1. Moreover, original claims 11 and 12 are canceled. In accordance with this amendment, claims 13 and 18 are amended to newly define the numbers of claims on which claims 13 and 18 are dependent.

Moreover, claims 2, 4 to 10, and 15 to 21 are amended to change their expression so as to clearly indicate the classification of the invention described in each of the claims. Note that the amendment for changing the expression should not be interpreted to alter the content of the invention per se. Period.